



The City of Duvall
June 2011

2010 ANNUAL WATER QUALITY REPORT

MEETING THE CHALLENGE

We are pleased to provide you with our annual Water Quality Report. This edition covers all testing completed from January 1 through December 31, 2010. The City of Duvall operates a first-class water system. We are proud of the system, and we welcome this opportunity to tell you about it. We want you to know where your drinking water comes from and how it is treated.

We have tried to make this report easy to understand. However, drinking water quality is a complex issue and some of the information is technical. Please share with us your thoughts about the information in this report. After all, well-informed customers are our best allies.

WHY WE PRODUCE THIS REPORT

The federal Environmental Protection Agency (EPA) sets regulations on water quality and ensures you are informed about your community's water quality through this required annual report. Since we are mandated to send it, we use the opportunity to share other important information as well. More importantly, we want you to know that your water is safe to drink and meets or exceeds all government standards. This information allows people, particularly those with special health needs, to make informed decisions about their drinking water. We are happy to comply because we support your right to know about the water you drink.

The City is pleased to report that our drinking water is safe and meets all federal and state requirements.

COMMUNITY PARTICIPATION

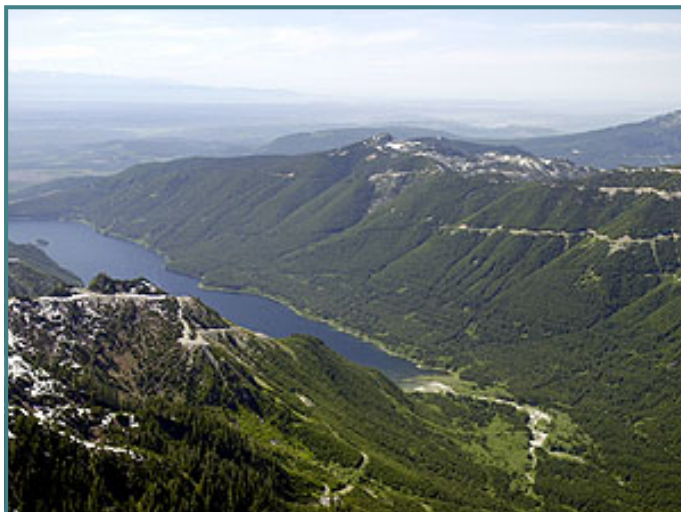
You are invited to participate in our public City Council meetings and voice any concerns you have about your drinking water. The City Council meets the 2nd and 4th Thursdays of each month at 7:00 p.m. in the meeting room at the Duvall Fire Station, 15600 - 1st Avenue, Duvall.

INFORMATION FOR YOUR REVIEW

The City has on file for customer review our November 2004 Water Comprehensive Plan, water quality test results, a Cross-Connection Control Plan, Development Design Standards, and the Water Shortage Response Plan. The City is currently updating the Water Comprehensive Plan and will complete the updates in 2011. A public hearing will be held to discuss the draft Water Comprehensive Plan update and it will be posted on the city's website for comment, www.duvallwa.gov.



View looking west from the top of the 0.5MG tank located at NE 144th Street & 282nd PI NE.



Tolt Watershed, photo courtesy of Seattle Public Utilities:

The steep slopes surrounding the Tolt Reservoir form the boundaries of the South Fork Tolt River Watershed and are being reforested to preserve water quality.

DRINKING WATER SOURCE

Seattle Public Utilities (SPU) provides many cities and water districts with water to supply their customers. The City of Duvall purchases all of its water from SPU. SPU has a large water main located south of the city limits in the Tolt Pipeline corridor. The City only receives water from the **Tolt Water Supply**, not the Cedar Water Supply.

Two transmission mains connect the City distribution system to the SPU supply system. A 1.25 mile long, ten-inch Asbestos Cement water main extends from the SPU pipeline to the intersection of Third Avenue and NE 144th PI where it transitions to the twelve inch Ductile Iron main. A second twelve-inch Ductile Iron transmission main connects to the SPU pipeline where it crosses Big Rock Road and extends to our large storage tank off of Big Rock Road.

WATER TREATMENT

The Tolt Facility treatment process consists of a series of steps. The first step is Ozonation which is adding ozone gas, a powerful disinfectant that destroys cryptosporidium, Giardia, bacteria, and viruses and aids the filtration process. This is followed by coagulation and flocculation (gently stirring the water with small doses of chemicals to bring small particles together to form large particles that can be more easily filtered), filtration (removing the suspended solids by passing the water through a 6-foot deep bed of anthracite), chlorination (adding a secondary disinfectant to provide continued protection in the distribution system against microbial contamination), fluoridation (adding fluoride which helps prevent tooth decay), and corrosion control (adding minerals, which increase the pH and alkalinity, to help reduce corrosion in building plumbing systems). All of these processes are monitored continuously at the facility, which is staffed twenty-four hours a day. To learn more about the Tolt Treatment Facility, see SPU's website at http://www.seattle.gov/util/About_SPU/Water_System/Water_Sources_& Treatment/Tolt_Treatment_Facility/index.asp or call their water quality information telephone at 206.615.0827.

DUVALL'S WATER SYSTEM FACTS

Square Miles Served: 2.5

Population Served: 6,695

- Single Family Residential: 2,195
- Multi-Family: 39
- Commercial: 84

Average Water Usage

(gallons per month 2010)

- Entire System: 13,959,799

DUVALL'S WATER FACILITIES

Water Storage Capacity:

- 2.2 million gallon storage tank
- 0.5 million gallon storage tank

Miles of Water Main (pipe): 39

No. of Fire Hydrants: 346

No. of Pump Stations: 1

No. of Pressure Control Stations: 15

No. of Pressure Relief Stations: 3

UPGRADED

The City installed 3,250 linear feet of water lines in 2010.



Pipeline Right-of-Way photo courtesy of Seattle Public Utilities:

From the filtration plant, water travels to the northern and eastern portions of the service area.

THE PURPOSE OF DISINFECTION, AND THE RESULTING DISINFECTION BY-PRODUCTS

Drinking water is disinfected to destroy bacteria, viruses, and Giardia (Inadequate disinfection may lead to acute gastrointestinal illnesses). However, as the disinfectant reacts with naturally occurring organic matter in the water, disinfection by-products are formed. Disinfection by-products have been linked to increased cancer risks from drinking water containing high levels (greater than the MCLs) over many years. New drinking water regulations provide a balance between required levels of disinfection and the resulting disinfection by-products. SPU's Tolt Filtration Plant improves Duvall's ability to provide a higher level of microbial protection while maintaining or reducing disinfection by-product levels.

WATER QUALITY MONITORING

SPU staff monitors water quality in the source water, treatment processes, and distribution system 365 days a year. Various compounds are monitored at specific frequencies (continuously, daily, monthly, quarterly, or annually) and locations (prior to treatment, entering the distribution system, and throughout the distribution system) in accordance with federal and state regulations. Many of these tests confirm the absence of various contaminants. Water quality monitoring conducted between January 1 and December 31, 2010 confirmed that there were no contaminants at or above established levels of concern for the general public. Please refer to the data tables in this report for more detailed information on water quality monitoring results.

WATER CLARITY

Turbidity, a measure of water's clarity, has no direct health effect but indicates the overall quality of the water. High turbidity can reduce the effectiveness of disinfection. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. SPU's source waters have very low turbidity. The unit of measurement for turbidity is the NTU (Nephelometric turbidity unit). SPU monitors source water tur-

bidity continuously on both the Tolt and Cedar supply. For each month in 2010, 100% of the treated samples from the Tolt Treatment Facility were below 0.3 NTU.

SUBSTANCES THAT COULD BE IN WATER

POTENTIAL	SOURCE
Microbial Contaminants	Viruses and bacteria from wildlife
Inorganic	Salts and metals which are naturally occurring
Pesticides and herbicides	Agriculture, urban stormwater runoff, residential
Organic	By-products of disinfection processes
Radioactive	Naturally occurring

To ensure that tap water is safe to drink, EPA adopts regulations setting the water quality standards for water systems.

INFORMATION ON THE POTENTIAL FOR HEALTH CONCERNS RELATING TO DRINKING WATER

The sources of all drinking water (both tap water and bottled water) includes rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals or human activity.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 1.800.426.4791, or from EPA's Office of Ground Water and Drinking Water web site at www.epa.gov/OGWDW.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immune-compromised people such as people with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers or the Safe Drinking Water hotline.



The Regulating Basin, photo courtesy of Seattle Public Utilities:

Water from the Tolt Dam enters the Regulating Basin where it is stored before entering the transmission line.

The table titled "Water Quality Monitoring Results" lists the contaminants detected in 2010 together with their concentrations and possible sources. The following paragraphs describe the significance of a few of these contaminants. Some tests are not required every year; for these tests, the concentrations listed are the results of the most recent testing. If you would like a copy of the list of contaminants that are monitored but were not detected in Duval's water, please call 425.788.3434.



DEFINITIONS

MCLG: *Maximum Contaminant Level Goal* — The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MCL: *Maximum Contaminant Level* — The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MRDL: *Maximum Residual Disinfectant Level* — The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG: *Maximum Residual Disinfectant Level Goal* — The level of a

drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

TT: *Treatment Technique* — A required process intended to reduce the level of a contaminant in drinking water.

NTU: *Nephelometric Turbidity Unit* — Turbidity is a measure of how clear the water looks. The turbidity MCL that applied to the Cedar

supply in 2007 is 5 NTU, and for the Tolt it was 0.3 NTU. 100% of the samples from the Tolt in 2007 were below 0.3 NTU.

NA: *Not Applicable*

ND: *Not Detected*

ppm: *1 part per million = 1 mg/L = 1 milligram per liter.*

ppb: *1 part per billion = 1 µg/L = 1 microgram per liter.*

1 ppm = 1000 ppb

2010 Water Quality Monitoring Results: THIS IS WHAT IS IN YOUR TAP WATER					
	EPA's Allowable Limits		Levels in Tolt Water	Is Your Water Safe?	
DETECTED PARAMETER & UNITS	MCLG	MCL			Typical Sources
Raw Water					
Total Organic Carbon, ppm	NA	TT	1.02	Yes	Naturally present in the environment
Cryptosporidium #/100L	NA	NA	ND	Yes	Naturally present in the environment
Finished Water					
Turbidity, NTU	NA	TT	0.11	Yes	Soil runoff
Fluoride, ppm	4	4	1.04	Yes	Water additive, which promotes strong teeth
Barium, ppb	2000	2000	2.0	Yes	Erosion of natural deposits
Nitrate, ppm	10	10	ND	Yes	Erosion of natural deposits
Arsenic, ppb	0	10	ND	Yes	Erosion of natural deposits
Chromium, ppb	100	100	ND	Yes	Erosion of natural deposits
Total Trihalomethanes, ppb	NA	80	33	Yes	By-products of drinking water chlorination
Haloacetic Acids (5), ppb	NA	60	28	Yes	By-products of drinking water chlorination
Total Coliform, % positive samples	0	5%	0.00%	Yes	Naturally present in the environment
E. Coli, # of samples	0	0	0	Yes	Human and animal fecal waste
Chlorine, ppm	MRDLG=4	MRDL=4	1.04	Yes	Water additive used to control microbes

CRYPTOSPORIDIUM

Cryptosporidium parvum is a protozoan pathogen (disease-causing organism) commonly found in the natural environment. Most rivers and streams across the country have detectable concentrations of this pathogen. Surface water sources include deer, elk, voles, and other animals in SPU watersheds. The Ozonation disinfection method at the Tolt Filtration Plant is very effective at destroying *Cryptosporidium* and other microbial organisms. SPU monitors for *Cryptosporidium* in the source water (prior to treatment). *Cryptosporidium* samples are not required to be collected from the Tolt supply due to removal and inactivation of *Cryptosporidium* by the Tolt Filtration Plant; however, SPU began collecting samples in 2005. *Cryptosporidium* was not detected in any of the 4 samples collected in 2010 for either the Tolt or Cedar.

RESIDENTIAL TAP MONITORING FOR LEAD AND COPPER

Our source waters do not contain lead or copper. However, lead and copper can leach into residential water from building plumbing systems containing copper plumbing, lead-based solder, brass fixtures, or some types of zinc coatings used on galvanized pipes and fittings (individual water services, not water mains). Homes built or plumbed with copper pipe prior to the 1985 King County lead solder ban would have likely used lead-based solder, and are considered "high risk" under EPA's criteria. Brass fixtures, regardless of age, generally contain some lead. Metals can leach into building plumbing systems when water is stagnant for extended periods of time (six hours or greater).

By regulation, lead and copper monitoring is conducted at "high risk" homes. Samples are collected from these homes after the water is allowed to stand in the pipes overnight. We are required to report the "90th percentile" result of the testing. This means that 90 percent of the high-risk homes have concentrations less than the reported value and 10 percent have concentrations higher than the reported value. Lead and copper monitoring was conducted most recently in summer 2008 and were both at or below the action levels. The next round of testing will be in August 2011. Compliance is determined on a regional basis.

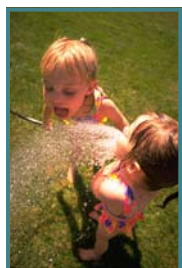
LEAD AND COPPER MONITORING RESULTS (TOLT WSA)

Parameter and Units	MCLG	Action Level+	2008 Results*	Homes Exceeding Action Level	Source
Lead, ppb	0	15	12	4 of 51	Corrosion of household plumbing systems
Copper, ppm	1.3	1.3	0.20	0 of 51	

* 90th Percentile: i.e. 90 percent of the samples were less than the values shown.

+ The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested. You can also flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is



available from the Safe Drinking Water Hotline 800.426.4791 or at www.epa.gov/safewater/lead.

SPU monitors several parameters in the interest of our customers. The table on the right lists the water quality information most recently requested.

Note: abbreviation definitions available on page 4.

ADDITIONAL WATER QUALITY SAMPLING

PARAMETER & UNITS	CEDAR SUPPLY	TOLT SUPPLY
Alkalinity, Total (as CaCO ₃) mg/L	20.2	19.2
Calcium, (as CaCO ₃) mg/L	23.0	25.9
Hardness, (as CaCO ₃) mg/L	26.9	27.4
Hardness, (as CaCO ₃) grains/gal.	1.55	1.58
Iron, ppb	66	41
Manganese, ppb	3.4	0.7
pH, range (January-June 2009, 10-90th percentile)	7.73-8.58	8.26-8.48
Potassium, mg/L	0.26	0.14
Sodium, mg/L	1.90	1.32
Sulfate, mg/L	1.4	1.9
Temperature, annual range, C°	4.6-23	3.3-22

Water Conservation Information

CAN YOU BE MORE EFFICIENT?

An average single-family household in Seattle uses 4,040 gallons a month in the winter and 5,759 gallons a month in the summer. Is your water use above average? Or do you want to increase your water use efficiency? Here are some easy ways to save water. You can find even more ways to conserve at www.savingwater.org, including rebates on water-saving appliances and fixtures.

- Wait to wash cloths until you have a full load.
- Switch to an efficient showerhead and take a shorter shower.
- Match the right plant to the right place in your garden. Subscribe to the Savvy Gardener Electronic Newsletter: http://www.savingwater.org/outside_savvygardener.htm.
- Adjust your lawn and/or gardening watering schedule for optimum efficiency (see how at www.iwms.org).
- Don't run the water while brushing your teeth.
- Find and repair any water leaks: <http://www.savingwater.org/inside.htm#leaks>.
- Look for the WaterSense label on new appliances: <http://www.epa.gov/watersense/products/index.html>.

TOP THREE THINGS YOU CAN DO TO CONSERVE WATER

INDOORS

Replace old Toilets

- Replacing an old toilet with a new WaterSense model saves an average household almost 30 gallons per day - and up to \$260 a year.



Upgrade Washers

- Upgrading an old clothes washer to a new WashWise qualified machine saves an average household* 27 gallons per day. WashWise certified machines also save energy and use less detergent.



Find and Fix Leaks

- Fixing leaks saves an average of 10 gallons per day per household. Check your toilet for leaks yearly. Visit savingwater.org to find out how.



IN YOUR YARD

Right Plant, Right Place

- Match plants to the conditions in your yard - if you have wet, shady areas, choose plants that thrive there, and the same with dry, sunny areas. If plants are well-suited to their place in your yard, you won't need to water so much.**

Cultivate your Soil

- Healthy soil holds water and gives plants the nutrients they need to stay beautiful. Add compost and mulch to your beds to slow the weeds and hold water near plant roots, where needed.**

Reduce Water Waste

- When you water, make sure the water gets to the roots, where plants need it. Drip irrigation systems avoid shooting water up into the air, where much of it evaporates.**

* Based on a four-person household

** Water savings vary depending on the size and design of your landscape.

WHAT YOU DO TO CONSERVE HELPS SALMON TOO

Healthy rivers with ample clean water are essential for healthy salmon populations. Everything you do to use water wisely – washing full loads, turning off the faucet, taking shorter showers, choosing plants that are right for the site, watering the lawn no more than it needs – helps keep water in our rivers and streams. Conserving is especially important in the summer and early fall, when river flows are lowest. Thank you for all you're doing to conserve water! Many of these practices save energy and protect the water quality of Puget Sound as well.

Thank you for all you're doing to conserve water. It makes a difference!

TAP VS. BOTTLED

Thanks in part to aggressive marketing, the bottled water industry has successfully convinced us all that water purchased in bottles is a healthier alternative to tap water. However, according to a four-year study conducted by the Natural Resources Defense Council, bottled water is not necessarily cleaner or safer than most tap water.

The FDA is responsible for regulating bottled water, but these rules allow for less rigorous testing and purity standards than those required by the EPA for community tap water. For instance, the high mineral content of some bottled waters make them unsuitable for babies and young children. Furthermore, the FDA completely exempts bottled water that is packaged and sold within the same state, which accounts for about 70% of all bottled water sold in the United States.

People spend 10,000 times more money per gallon for bottled water than they typically do for tap water. If you get your recommended eight glasses a day from bottled water, you could spend up to \$1,400 annually. The same amount of tap water would cost about 49 cents. Even if you installed a filter device on your tap, your annual expenditure would be far less than what you'd pay for bottled water.

For a detailed discussion on the NRDC study results, check out their website at www.nrdc.org/water/drinking/bw/exesum.asp.



WATERSHED PROTECTION

Watershed protection is the first line of defense in protecting the naturally pristine water of the Tolt River. The watershed is patrolled on a regular basis. Access is restricted to sensitive areas of the watershed, and human activities are managed to minimize potential impacts on water quality. SPU also works with other jurisdictions and agencies to establish and maintain land-use policies that minimize the potential water quality impacts from human activities in the watershed.

CROSS CONNECTION ALERT FOR ANNUAL BACKFLOW ASSEMBLY TESTING

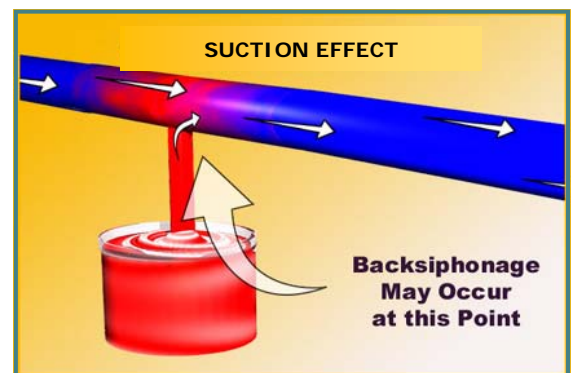
A connection between your drinking water pipes and a source of contamination is called a cross connection. Examples include irrigation systems; dialysis machines; nearly every hose-end applicator used for fertilizers, pesticides and herbicides; photo developing equipment; and industrial waste uses.

Cross connections are extremely dangerous because they provide opportunities for contaminating fluids to be pulled back into the water system.

To help minimize the dangers, please use the following tips:

- Avoid using hose-end spray applicators for landscaping chemicals.
- Install a backflow assembly if there is an existing or potential cross-connection.
- Have the backflow assembly tested by a state-certified backflow tester after installation and send a copy to the City of Duvall Public Works Dept., PO Box 1300, Duvall, WA 98019.
- Every year, all Duvall water utility customers who have backflow assemblies must have them tested and send a copy of certification to the Public Works Dept.

For more information, review the Cross-Connection Control Manual from the U.S. EPA's website at www.epa.gov/safewater/crossconnection.html. You can also call the Safe Drinking Water Hotline at 1.800.426.4791.



LOOKING INTO THE FUTURE

Thank you for helping us continue providing your family with clean, quality water this year. This has been a community effort. In order to maintain a safe and dependable water supply we sometimes need to make improvements that will benefit all of our customers. Last year's improvements included installing system wide pressure relief stations, reconstructing mainlines and providing improved flow and water quality in the system. The City has completed installing and is using the Radio-Read meter reading system. Thank you for your understanding and support. Due to recent events throughout the nation, we have heightened the security of our water supply network and tried to limit the access to the system for your protection.

We at the City of Duvall work around the clock to provide top quality water to every tap. We ask that all our customers help us protect our water supply, which is the heart of our community, our way of life, and our children's future.

For more information on this report, or any questions relating to your drinking water, please call the Public Works Department at 425.788.3434. For Billing or Consumption Records / questions contact the Utility Billing Clerk at 425.788.1185.



Tolt Reservoir photo courtesy of Seattle Public Utilities:

At 1765 feet above sea level, the Tolt Reservoir is the primary water storage area in the Tolt River Watershed.



Public Works Dept.
14525 Main Street NE
PO Box 1300
Duvall, WA 98019